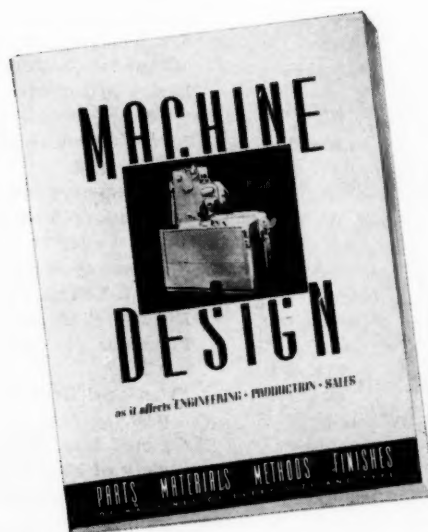


# MACHINE DESIGN

INDEX TO VOLUME 11, JAN. TO DEC. 1939



THE PROFESSIONAL JOURNAL OF CHIEF ENGINEERS AND DESIGNERS

PUBLISHED BY PENTON PUBLISHING CO., PENTON BLDG., CLEVELAND

# MACHINE DESIGN

## Index to Contents

### January to December, 1939

#### A

##### Alloys:

See Materials.

##### Appearance:

See Styling.

##### Automobiles:

Innovations in 1940 cars, featured by automatic gearshift, Nov., p.31.

#### B

##### Balancing:

Dynamic, for crankshaft, Aug., p.53.

Engine, assembled,\* Dec., p.33.

Spring, of hinged masses, Feb., p.37.

##### Bearings:

Aluminum, wide use seen for, announced,\* Nov., p.62.

Antifriction, machine tool applications, new uses seen, Sept., p.40.

Ball,

in idler, announced,\* Aug., p.72.

in pillow block, announced,\* Aug., p.78.

light, save space, announced,\* Oct., p.68.

pillow blocks, announced,\* Jan., p.58.

pillow blocks, announced,\* July, p.57.

Bushings in 1940 cars,\*\* Nov., p.82.

Cartridges, all-rubber, announced,\* July, p.60.

Engine, in connection with alignment,\*\* Jan. p.28.

Impregnated retainers incorporated in, announced,\* Dec, p.58.

Needle, capacity increased, announced,\* June, p.70.

Nonmetallic, improved, announced,\* Aug., p.68.

Pillow block, one-piece steel housing, announced,\* June, p.74.

Powder metal oilless,\*\* Feb., p.46.

Labyrinth seal, utilized in,\* Oct., p.54.

Roller,

light section. large bore, announced,\* Feb., p.82.

Sealed,

inner race touches seal, announced,\* Nov., p.66.

with triple seal, announced,\* Jan., p.68.

Self-locking, in pillow block, announced,\* Jan., p.54.

Surface fatigue in, how to reduce,\*\* March, p.42.

##### Belting:

See Drives.

##### Biographical Sketches:

Adams, W. J., Oct., p.50.

Addison, Tom, May, p.50.

Anderson, David E., March, p.50.

Beall, Wellwood, E., Sept., p.57.

Behne, E. O., Sept., p.57.

Burks, George E., Jan., p.49.

Crane, G. S., Aug., p.54.

Ditges, William L., July, p.53.

Downe, Edward R., Nov., p.57.

Ekblaw, K. J. T., July, p.53.

Geist, Walter, June, p.60.

Goldsmith, Lester M., Dec., p.54.

Hall, C. H., Aug., p.54.

Jack, Robert K., Aug., p.54.

Johnston, Edward A., April, p.40.

Jones, Webster N., March, p.50.

Klekhaefer, E. C., May, p.50.

Lovely, John E., Dec., p.54.

McBryde, Warren H., Sept., p.57.

Minshall, Robert J., Feb., p.53.

Morgan, H. H., Oct., p.50.

Nutt, Arthur, Nov., p.57.

Prentis, Edmund A., Feb., p.53.

Redding, Charles S., Nov., p.57.

Sando, J. B., Dec., p.54.

Savage, Marion A., April, p.40.

Schranz, F. G., June, p.60.

Seeger, E. W., Feb., p.53.

Smith, Marvin W., July, p.53.

Scarratt, A. W., June, p.60.

Swift, Lewis B., Jan., p.49.

Walter, John M., Oct., p.50.

Ward, J. Carlton, April, p.40.

Weaver, James R., May, p.50.

Whitaker, U. A., March, p.50.

Zellman, R. H., Jan., p.49.

##### Books:

*Air Conditioning, Heating and Ventilating*, by J. Ralph Dalzell and Charles L. Hubbard, Feb., p.56.

*Alloy Cast Iron*, published by the American Foundrymen's association, June, p.58.

*Applied Economics for Engineers*, by Bernard Lester, Nov., p.56.

*Arc Welding*, published by the James F. Lincoln Arc Welding Foundation, June, p.58.

*Design of Industrial Exhaust Systems*, by John L. Alden, Sept., p.60.

*Diesel Engines—Theory and Design*, by Howard E. Degler, June, p.58.

*Direct-Current Machinery*, by Thomas C. McFarland, July, p.52.

*Elements of Mechanism*, by Peter Schwamb, Allyne L. Merrill and Walter H. James, Jan., p.47.

*Engineering Mechanics—Two Volumes*, by S. Timoshenko and D. H. Young, Jan., p.47.

*Engineers' Manual*, by Ralph G. Hudson, March, p.54.

*Formulas for Stress and Strain*, by Raymond J. Roark, Feb., p.55.

*Fractional Horsepower Electric Motors*, by C. G. Veinott, Sept., p.60.

*General Discussion on Lubrication*, published by American Society of Mechanical Engineers, Jan., p.47.

*Handbook of Refrigerating Engineering*, by W. R. Woolrich, Jan., p.48.

*Heat Treatment of Metallurgical Products*, by Albert Portevin, May, p.54.

*Heating, Ventilating, Air Conditioning Guide*, published by American Society of Heating and Ventilating Engineers, July, p.52.

*Internal Combustion Engine, The*, by D. R. Pye, Feb., p.55.

*Kent's Mechanical Engineers' Handbook—Design and Shop Practice*, Jan., p.47.

*Lubricants and Lubrication*, by James I. Clower, Nov., p.56.

*Machine Design*, by Stanton E. Winston, Sept., p.60.

*Machinery's New Handbook*, published by the Industrial Press, May, p.54.

*Manual of Mathematics and Mechanics*, by Guy Roger Clements and Levi Thomas Wilson, Feb., p.56.

*Mechanics of Machinery*, by C. W. Ham and E. J. Crane, Feb., p.55.

\*Denotes short articles or announcements, less than page.  
\*\*Denotes references contained in major articles.

*Mechanisms*, by Robert McArdle Keown and Virgil Moring Faibles, Feb., p.55.  
*Practice of Lubrication, The*, by T. C. Thomsen, Jan., p.48.  
*Protective Coatings for Metals*, by R. M. Burns and A. E. Schuh, Nov., p.56.  
*Steel and Its Heat Treatment, Vol. II*, by D. K. Bullens, Sept., p.60.  
*Strength of Materials*, by Norman C. Riggs and Max Frocht, May, p.54.  
*Structural Aluminum*, published by the Aluminum Co. of America, Feb., p.55.  
*Thermodynamics, Fluid Flow and Heat Transmission*, by Huber O. Croft, March, p.54.  
*Theoretical Mechanics*, by Carl Jenness Coe, June, p.58.  
*Theory of Application of Electron Tubes*, by Herbert J. Reich, July, p.52.  
*Theory of Machines, The*, by Thomas Bevan, May, p.54.  
*U.S.S. Carilloy Steels*, published by Carnegie-Illinois Steel Corp., March, p.54.

#### Brakes:

Cam-operated, in telescoping lift,\*\* April, p.36.  
 Hydraulic pressure, doubling automatically,\* Aug., p.32.  
 Torque motor brake, announced,\* March, p.64.

#### Business Announcements:

Jan., p.77; Feb., p.92; March, p.82; April, p.68; May, p.80; June, p.98; July, p.84; Aug., p.94; Sept., p.100; Oct., p.84; Nov., p.94; Dec., p.92.

### C

#### Calendar of Meetings:

Jan., p.72; Feb., p.88; March, p.77; April, p.58; May, p.74; June, p.84; July, p.70; Aug., p.88; Sept., p.84; Oct., p.78; Nov., p.78; Dec., p.72.

#### Cams:

Assembly of five, control teletyper,\* June, p.36.  
 Brakes in telescoping lift operated by,\*\* April, p.36.  
 Conveying mechanism of bread wrapper utilizes, gains speed, dependability,\*\* Sept., p.51.  
 In small grinder, transfers motion to spindle,\*\* Sept., p.35.  
 Large, case-hardened, in concrete pumper,\*\* Nov., p.45.

#### Castings:

Die, producers of, directory, supplement to Oct. issue, p.56D.  
 Iron, malleable, combination of properties is strong point of, Oct., p.37.  
 Redesign of cast parts, how welding helps, Feb., p.41.  
 Wrinkle finish for, announced,\* Nov., p.64.

#### Chains:

Endless, in bread wrapper,\*\* Sept., p.49.  
 Quiet if short pitch used,\*\* April, p.33-S.  
 Roller, in telescoping lift drive,\*\* April, p.35.  
 Roller, lubricated, standardized, announced,\* Nov., p.62.

#### Clutches:

Centrifugal, automatic, needs no oiling, announced\* Oct., p.64.  
 Clutching is function of motor speed,\* June, p.37.  
 Magnetic clutch-brake, announced,\* Jan., p.58.  
 Mercury, friction segments displaced,\* Dec., p.32.  
 Friction, metallic, in automatic screw machine,\*\* April, p.22-S.  
 Quiet, in accounting machine,\*\* April, p.33-S.  
 Reducing effort by assister spring,\* Oct., p.36.  
 Rubber tire used in, through inflation,\* Aug., p.33.  
 Spring, characteristics of, Nov., p.46.

#### Color:

See *Finishes and Styling*.

#### Contributors:

Allen, A. H.—*Automatic Gearshift Tops 1940 Innovations*, Nov., p.31; *Small Size. Light Weight Complicate Tiny Engine Design*, Feb., p.45.  
 Aulsebrook, W. J.—*Redesign Eliminates Noise and Vibration*, July, p.42.  
 Ball, C. F.—*Ordinarily Handicaps—But Capitalized in Design*,

Nov., p.42.

Balsiger, H. E.—*Compactness—a Key to Good Design*, Sept., p.33.

Bergmann, R. F.—*Mile-Long Machine Performs Continuous Process*, March, p.25.

Binder, R. C.—*Graphs Aid in Governor Design*, May, p.39.

Blisschopp, K. E.—*Calculating Stresses in Crankshafts from Strain Gage Readings*, Jan., p.28; *Computing Eye Rod Stresses from Curves*, Sept., p.47.

Crosby, V. A.—*How Heat Treatment Affects Cast Iron*, June, p.53.

Dall, Albert H.—*Hydraulics Cannot Be Denied*!, April, p.28-S and May, p.23.

Delmonte, J.—*How Use Affects Physical Properties of Plastics*, Dec., p.40; *Injection or Compression Molding?*, July, p.29; *Why Not Combine the Plastic with the Metal?* April, p.31.

Eakin, C. T.—*Combination of Properties Is Strong Point of Malleable Castings*, Oct., p.37.

Elberty, R. S.—*That Question of Cost!*, May, p.31.

Ernst, Hans—*Hydraulics Cannot Be Denied*!, April, p.28-S and May, p.23.

Flint, Thomas—*Temperature Control Is Basis for Candy Machine*, Feb., p.29.

Gaillard, John—*How Smooth Is Smooth?*, Aug., p.29.

Greve, John W.—*Built-In Instruments Facilitate Accurate Control*, Dec., p.44; *Flexible Shafting Facilitates Control Problems*, Aug., p.43; *To Help Machine Sell—Use Quiet Drive*, April, p.32-S.

Griswold, George Z.—*Attaining Speed, Power, Flexibility*, April, p.21-S; *Magnesium Alloys Find Wider Application in Machine Parts*, Dec., p.34; *Selecting Seals and Packing*, May, p.34; June, p.42; July, p.39.

Harrison, J. B.—*Telescoping Lift Embodies Unique Drive*, April, p.35.

Henninger, P. E.—*Building Up Machine Parts from Strip Metal and Standard Bars*, Feb., p.34.

Herzig, A. J.—*How Heat Treatment Affects Cast Iron*, June, p.53.

Hunter, R. P.—*Relay Cuts Maintenance Costs*, Jan., p.38.

Jensen, T.—*How Refinements Aided Design of Bread Wrapper*, Sept., p.49.

Ketcham, Howard—*Color Styling Helps Sales*!, Oct., p.40.

Kroon, R. P.—*Elastic Hinge Principle Utilized in Telescope Mounting*, Jan., p.34.

Maddox, W. A.—*Weight Is Reduced, Rigidity Increased by Welded Design*, Jan., p.40.

Martins, George R.—*Drafting Room Practice*, July, p.45.

Mills, A. W.—*For Good Design, Economize*, June, p.33.

Molner, J. L.—*Utilizing High Strength Castings*, June, p.57.

Nenninger, L. F.—*Weight Is Reduced, Rigidity Increased by Welded Design*, Jan., p.40.

Ogilvie, W.—*Nitriding, Though More Costly, Proves Its Worth*, Sept., p.44.

Pesqueira, J. J.—*Spring Balancing of Hinged Masses*, Feb., p.37.

Ridgway, W. R.—*Which Motor Fits the Job?*, July, p.36.

Scott, R. M.—*Glass Braider Demonstrates Weaving Principles*, Dec., p.29.

Shepherd, H. F.—*Materials in Oil Field Equipment*, Oct., p.33; *Why Thermal Stresses Cause Failure of Parts*, Feb., p.47.

Shuffstall, Joseph A.—*How Welding Can Help in Redesign of Steel Castings*, Feb., p.41.

Smith, J. F. Downie—*Load Characteristics of Rubber Mountings*, Aug., p.46 and Oct., p.43.

Spannhake, W.—*Hydrodynamic Torque Converter Supplements Fluid Coupling*, June, p.39.

Timmons, G. A.—*How Heat Treatment Affects Cast Iron*, June, p.53.

Van Doren, Harold—*Attractive Nameplates Enhance Appearance*, Nov., p.37; *Illusions Aid Appearance*, April, p.23; *Why Streamline?*, Aug., p.39.

Vea, O. F.—*When to Use the Shell-Type Motor*, April, p.24-S.

Wahl, A. M.—*Design and Selection of Disk Springs*, March, p.32; *Factors Affecting Accurate Spring Selection*, Aug., p.34; *Utilizing the Flat Spring in Accurate Mechanisms*, Nov., p.40.

\*Denotes short articles or announcements, less than page.  
 \*\*Denotes references contained in major articles.



Washauer, Alfred—*Pneumatic, Hydraulic Servo-Motors Reduce Operator's Load*, Jan., p.36.  
 Way, S.—*How to Reduce Surface Fatigue*, March, p.42.  
 Wellauer, Edward J.—*Metallurgical Aspects of Gearing*, June, p.45.  
 Wiebusch, C. F.—*Capacity of Spring Clutches*, Nov., p.46.  
 Wine, E. P.—*Compactness—a Key to Good Design*, Sept., p.33.  
 Wolf, Austin M.—*Fluid Flywheel Marks New Era in Auto Transmissions*, Jan., p.23.  
 Woodling, George V.—*Don't Skimp on Your Patent Searches!*, March, p.38; *How To Determine Patentability*, June, p.49; *New Laws Speed Patent Procedure*, Dec., p.37.

#### Controllers:

Automatic, for controlling acceleration of motors, announced,\* Feb., p.66.  
 Multi-step, for alternating current motors, announced,\* March, p.70.

#### Controls (electrical):

All-electrical control of small grinder,\*\* Sept., p.36.  
 Attenuator, announced,\* Oct., p.76.  
 Automotive,\*\* Nov., p.80.  
 Circuit breakers,  
   announced,\* Dec., p.66.  
   smaller line added, announced,\* Aug., p.72.  
 Electronic,  
   cell adjusts camera exposure, Feb., p.44.  
   difficult processes made simple, April, p.38-S.  
   in facsimile receiver,\* Feb., p.32.  
   photoelectric receiver announced,\* April, p.52.  
   relay uses photoelectric lamp, announced,\* Aug., p.74.  
 Fuses, carry reasonable overloads, announced,\* Sept., p.80.  
 Hydraulic action thermal systems, announced,\* Feb., p.80.  
 Indicator, speed, announced,\* Aug., p.78.  
 Pilot, automatic, lights gas range,\* April, p.28.  
 Pushbuttons,  
   heavy duty, announced,\* Nov., p.70.  
   in automatic screw machine,\*\* April, p.23-S.  
   standard duty, new line announced,\* July, p.57.  
 Radio pushbutton, tuning with solenoid,\* Aug., p.32.  
 Relays,  
   automatic, entirely self-contained, announced,\* Feb., p.74.  
   electronic, announced,\* Dec., p.64.  
   improved system, cuts maintenance costs, Jan., p.39.  
   magnetic clutch resets, announced,\* Sept., p.76.  
   mercury plunger, announced,\* Dec., p.60.  
   photoelectric, announced,\* Aug., p.74.  
   photoelectric cell used in, announced,\* March, p.68.  
   pushbutton locking, announced,\* Aug., p.68.  
   replacing shear pin with,\* Jan., p.27.  
   reset, independent, announced,\* July, p.66.  
   rotating, made for high speed, announced,\* Oct., p.66.  
   small reset, announced,\* March, p.72.  
   used with microphone to control mill,\* May, p.30.

#### Starters,

across-the-line, announced,\* June, p.68.  
 across-the-line, announced,\* Nov., p.74.  
 delay mechanism in, new, announced,\* Nov. p.68.  
 magnetic, automatic, announced,\* Oct., p.76.  
 starters, nonreversing, announced,\* April, p.50.

Stoker, announced,\* July, p.60.

#### Switches,

built-in to facilitate "clean-lining,"\* Feb., p.33.  
 double throw, announced,\* Sept., p.72.  
 electric time, motor lubrication sealed, announced,\* Nov., p.76.  
 electronic, prevents arcing, announced,\* Oct., p.78.  
 enclosed, front-operated, announced,\* Feb., p.68.  
 for small motors, announced,\* Oct., p.74.  
 limit, mercury button contact, announced,\* May, p.66.  
 magnetic, for single phase motors, announced,\* Feb., p.80.  
 mercury button employed, announced,\* April, p.52.  
 mercury, capacity increased, announced,\* Nov., p.64.  
 mercury, gives delay-action, announced,\* Nov., p.74.

mercury, used in remote control,\* Nov., p.36.  
 motor circuit switches and linestarter combined, announced,\* May, p.70.  
 multi-breaker, announced,\* Oct., p.70.  
 precision, light, announced,\* Jan., p.62.  
 roller leaf-actuated, announced,\* April, p.48.  
 safety, rocker type, announced,\* May, p.64.  
 snap, announced,\* Feb., p.70.  
 tandem assembly available, announced,\* Sept., p.66.  
 tap, announced,\* July, p.60.  
 thermal expansion of shell actuates,\* March, p.31.  
 Timers,  
   announced,\* Jan., p.26.  
   automatic, announced,\* Jan., p.54.  
   machine operation indicated, announced,\* June, p.76.  
   records processing time, announced,\* July, p.66.  
   synchronous, control one to six circuits, announced,\* Sept., p.80.  
   vernier-set, announced,\* March, p.74.  
   weld, announced,\* July, p.57.  
   welding, announced,\* May, p.68.  
   wide adjustability, announced,\* Nov., p.72.

#### Cords:

See *Electrical Equipment*.

#### Counters:

Instantaneous reset, controlled by two switches, announced,\* Nov., p.70.  
 New series, announced,\* Feb., p.62.  
 Photoelectric, announced,\* May, p.73 and Sept., p.76.  
 Proportionate, uses spiral gears,\* Nov., p.35.

#### Couplings:

Flexible,  
   announced,\* June, p.70.  
   body of Tobin bronze, announced,\* Feb., p.64.  
   insulated, five intermediate sizes of, announced,\* Feb., p.70.  
   magnetic, synchronization of power from rotor to frame,\* July, p.35.  
   misalignment accommodated by, announced,\* Nov., p.66.  
 Radial, announced,\* April, p.52.

## D

#### Design Department:

See *Engineering Department Equipment*.

#### Design Features in New Machines:

Jan., p.44; Feb., p.50; March, p.46; April, p.36-S; May, p.44; June, p.54; July, p.48; Aug., p.50; Sept., p.54; Oct., p.48; Nov., p.52; Dec., p.50.

#### Devices:

Measuring, determines thickness of boiler plate, discussed,\* Jan., p.25.

#### Die Castings:

See *Castings*.

#### Drives:

Belting,  
   in accounting machine,\*\* June, p.34.  
   on small grinder,\*\* Sept., p.34.  
   quiet inherently, importance of,\*\* April, p.33-S.  
   round, composition, announced,\* Jan., p.60.  
   single pulley, drives attachments on automatic screw machine,\*\* April, p.21-S.  
   withstands destructive oils, announced,\* Sept., p.78.  
 Clutch-brake combination announced, July, p.64.  
 Driveshaft, incorporates coupling, announced,\* April, p.46.  
 Electrical,  
   co-ordinated with cost and appearance, May, p.31.  
   justification depends on cost,\* May, p.33.  
 Flywheel, fluid, Chrysler, discussion of, Jan., p.23.  
 MotoReduceR, shuts off at overload, announced,\* Aug., p.66.  
 Quiet, help machine seal, April, p.32-S.  
 Speed reducers,

\*Denotes short articles or announcements, less than page.  
 \*\*Denotes references contained in major articles.

line increased, announced,\* Sept., p.66.  
 line increased, announced,\* Sept., p.82.  
 have 15 standard ratios, announced,\* Dec., p.58.  
 vertical, announced,\* March, p.74.  
 Synchronizing, in airplane engines,\* July, p.34.  
 Torque converter, hydrodynamic, supplements fluid coupling, June, p.39.  
**Transmissions,**  
 automatic gearshift in automobiles, Oldsmobile, Nov., p.31.  
 infinitely variable,\*\* April, p.22-S.  
 variable speed, announced,\* Feb., p.82.  
 variable speed, announced,\* July, p.58.  
 variable speed, completely automatic, announced,\* July, p.64.  
 variable speed, controlled by handwheel, announced,\* Dec., p.64.  
 variable speed, design for machine tools, announced,\* Sept., p.74.  
 variable speed, handwheel selects speed, announced,\* June, p.68.  
 variable speed, wide range, announced,\* Sept., p.70.  
 variable speed, with handwheel control, announced,\* May, p.73.  
 Worm gear, in rayon machine,\*\* March, p.29.

## E

### Editorials:

Consideration of Machine Operator Again Comes to Fore, Jan., p.46.  
 Fluid Couplings and Torque Converters Have Promising Future, June, p.56.  
 If Money Must Continuously Be Spent—Spend Some on Research!, Feb., p.52.  
 Increased Travel Should Be Possible with Better Business Conditions, Dec., p.52.  
 It's Time To Broadcast Facts Regarding Use of Machines, April, p.39.  
 Spotlight Is on Design Materials Due to War-Time Conditions, Oct., p.47.  
 Steps Should Be Taken to Reduce Engineering Unemployment!, March, p.48.  
 Time Has Come To Eliminate the Hangover of Conservatism!, Nov., p.54.  
 Ten Years' Progress Overturns Concepts of Design, Sept., p.56.  
 We Can't Let Other Countries Outdo Us Mechanically!, July, p.50.  
 Where Will Present Trend Toward Automaticity Lead Next?, Aug., p.52.  
 World's Fairs, Not War, May Initiate Turning Point in Business, May, p.46.

### Electrical Equipment:

Wiring in bread wrapper, accessible but unseen,\*\* Sept., p.52.

### Electronic Devices:

See Controls (electrical).

### Engines:

Airplane, model, complicated by small size, light weight, Feb., p.45.  
 Diesel, variable stroke, two-cycle,\* March, p.30.  
 Heavy duty line increased, announced,\* Sept., p.68.  
 Heavy duty, complete new line announced,\* May, p.70.

### Engineering Department Equipment:

Analyzer, sound, announced,\* Feb., p.72.  
 Balancing instrument, portable, announced,\* Dec., p.68.  
 Binder attachment tapes one side of papers, announced,\* Nov., p.77.  
 Drafting machine,  
 lightweight, announced,\* Aug., p.80.  
 minimizes fatigue, announced,\* June, p.82.  
 universal, announced,\* April, p.56.  
 Drawing instruments, American-made, announced,\* Dec., p.70.  
 Envelope, protects prints, announced,\* Feb., p.66.

\*Denotes short articles or announcements, less than page.  
 \*\*Denotes references contained in major articles.

Foil, impregnated with light-sensitive solution, announced,\* July, p.68.  
 Lettering set, portable drawing table, announced,\* Nov., p.78.  
 Pencil cloth, announced,\* March, p.76.  
 Pencils, number of degrees increased, announced,\* July, p.68.  
**Printing machines,**  
 blue, announced,\* March, p.75.  
 blue, announced,\* Dec., p.70.  
 blue, continuous, announced,\* June, p.80.  
 portable, announced,\* April, p.56.  
 white, announced,\* Jan., p.67.  
 white, announced,\* Feb., p.78.  
 Slide rules, announced,\* July, p.70.  
 Stroboscopes, study speed, motion, announced,\* June, p.80.  
 Tracing cloth, announced,\* Sept., p.84.  
 Tracing paper, has transparency, permanence, announced,\* Sept., p.82.  
 White tape protects tracing edges, announced,\* March, p.76.

## F

### Fastenings:

Bolts hidden in assembly,\* June, p.37.  
 Capscrews, hollow head, in bread wrapper,\*\* Sept., p.52.  
 Custom-built to specifications, announced,\* Sept., p.76.  
 Guide covers, use felt washers, announced,\* March, p.72.  
 Thread insert, prevents stripping,\* April, p.29.

### Filters:

Air, announced,\* June, p.68.  
 Air and gas, announced,\* Feb., p.82.  
 Oil,  
 bypass principle used in, announced,\* Oct., p.66.  
 for machine tools, announced,\* Aug., p.76.  
 self-cleaning, announced,\* Sept., p.74.

### Finishes:

Coatings for magnesium alloys developed,\* Sept., p.68.  
 Color, cream white, for sanitation, in bread wrapper,\*\* Sept., p.52.  
 Color styling helps sales, Oct., p.40.  
**Enamels,**  
 low-bake, announced,\* May, p.64.  
 synthetic, bake quickly, announced,\* June, p.80.  
 Plating, of aluminum, method developed, July, p.51.  
 Rough metals, announced,\* Sept., p.80.  
 Superfinish, eliminating wear with,\* Feb., p.36.  
 Surface smoothness, how it affects strength, how defined, Aug., p.29.  
 Treatment aids zinc-coated and galvanized finishes,\* March, p.64.  
 Tubing, chromium plating insides,\* Aug., p.33.  
**Wrinkle,**  
 developed for castings, announced,\* Nov., p.64.  
 uses for expanded, announced,\* Oct., p.70.

### Forgings:

Producers, directory, supplement to Oct. issue, p.50D.

## G

### Gears:

Automotive, improvements in 1940 cars,\*\* Nov., p.32.  
 Ball-nut, improves steering,\* Feb., p.31.  
 Glass braider gears weave,\*\* Dec., p.29.  
 Heavy unit, two-stage, develops high speeds,\* Sept., p.43.  
 How to reduce noise,\*\* April, p.33-S.  
 Hydrodynamic, supplement fluid coupling, June, p.39.  
 Improving materials of, with addition of nickel to steel and iron, Dec., p.47.  
 Metallurgical aspects of, June, p.45.  
 Spindle head of automatic screw machine,\*\* April, p.21-S.  
 Spur, in telescoping lift drive,\*\* April, p.36.  
 Teeth, surface fatigue in, how to reduce,\*\* March, p.43.  
 Worm,  
 in accounting machine,\*\* June, p.34.  
 in rayon machine drive, March, p.29.

## H

### Heating Units:

Strip heaters,  
announced,\* Jan., p.60 and March, p.75.

### Hydraulics:

Automatic control for use with variable speed transmission,  
announced,\* May, p.62.  
Automatic gearshift, Oldsmobile,\*\* Nov., p.31.  
Combination with electric mechanisms,\*\* May, p.23.  
Cylinders, high pressure, announced,\* April, p.44.  
Doubling pressure automatically for braking,\* Aug., p.32.  
Gear speed changes provided by,\* May, p.28.  
Hydraulics Cannot Be Denied!, April, p.28-S and May, p.23.  
Punches for multiple operation,\* Feb., p.33.

## I

### Instruments:

Built-in, facilitate accurate control, Dec., p.44.  
Flat springs utilized in, Nov., p.40.  
Gages, mercury pressure, improved, announced,\* Oct. p.70.

### Inventions:

See Patents.

## J

### Joints:

Universal, points to consider in applying, Nov., p.47.

## L

### Lighting:

Automotive, 1940,\*\* Nov., p.82.  
Lamp, fluorescent, announced,\* Jan., p.67.

### Lubrication:

Automatic, in automatic screw machine,\*\* April, p.22-S.  
Fittings, addition to line announced,\* July, p.62.  
Fittings, buttonhead, announced,\* Jan., p.54.  
Oil, effect of on surface cracks,\*\* March, p.44.  
Oilers,  
automatic, protect parts, announced,\* Aug., p.70.  
lubricate automatically, announced,\* Dec., p.62.  
System for small machines, announced,\* May, p.66.

## M

### Machinery:

Bread wrapper, how refinements aided design of, Sept., p.49.  
Cameras,  
exposure adjusted by photo-electric cell, Feb., p.44.  
portable X-ray, aids flaw detection,\* May, p.43.  
Candy machine, basis of is temperature control, Feb., p.29.  
Compressors,  
refrigerating, redesign of eliminates noise and vibration,  
July, p.42.  
uses built-in motor,\* May, p.30.  
Concrete pumping machine, design of, Nov., p.42.  
Conveyor, belt, tension controlled on,\* Jan., p.27.  
Facsimile,  
transmitter, synchronization of with receiver,\* July, p.34.  
tuning forks synchronize recorder and transmitter,\* Sept.,  
p.38.  
Flying boat, designed for passengers, can carry bombs, July,  
p.47.  
Forging machine, hammer type, has 50,000-pound piston,\*  
Jan., p.26.  
Futurama, electrical design of,\* June, p.38.  
Glass braider, demonstrates weaving principles, Dec., p.29.  
Grinder, for small ball bearing raceways, design of, Sept., p.33.  
Hydraulics in, increasing importance of, April, p.28-S and  
May, p.23.  
Lathe, girder design applied to bed,\* Dec., p.32.  
Lift, telescoping, embodies unique drive, April, p.35.

### Machine tools,

role of, in industry and national life, booklet,\* Sept., p.43.  
weight reduced, rigidity increased, by welding, Jan., p.40.  
Paper shredder, effecting economies in, by welding, Nov., p.51.  
Paper, speed of increased, by vacuum process, May, p.41.  
Rayon spinning machine, continuous, discussed, March, p.25.  
Screw machine, automatic single spindle, features of drive,  
April, p.21-S.  
Servo-motors, pneumatic and hydraulic, reduce operator's load,  
Jan., p.36.  
Snow cruiser, features of,\* Oct., p.46.  
Trailer, "Jungle Yacht," utilizes continuous hinge for stream-  
lining,\* Jan., p.38.  
Transfer posting (office) machine, design of, June, p.33.  
Turret press, layout time obviated on,\* Sept., p.38.

### Magnets:

Permanent, eliminate shaft bushings,\* April, p.29.

### Management:

Drafting room practice, July, p.45.

### Manufacturers' Publications:

Jan., p.73; Feb., p.89; March, p.79; April, p.64; May, p.76.  
June, p.94; July, p.80; Aug., p.90; Sept., p.96; Oct., p.80;  
Nov., p.86; Dec., p.86.

### Materials:

Alloys,  
aluminum, announced,\* Jan., p.68.  
aluminum, camera body,\*\* Feb., p.44.  
aluminum, in flying boat construction,\*\* July, p.47.  
aluminum, in folding unit of bread wrapper,\*\* Sept., p.52.  
aluminum,\* March, p.31.  
aluminum, sand cast, announced,\* Jan., p.54.  
beryllium, shapes announced,\* July, p.60.  
die cast, in model airplane engine,\*\* Feb., p.46.  
iron, cast, utilizing in machine tools, June, p.57.  
iron, improving gear materials with nickel, Dec., p.47.  
iron, insure long life in gears, cams of bread wrapper,\*\*  
Sept., p.52.  
iron, two new grades, announced,\* July, p.58.  
magnesium, coatings for, developed,\* Sept., p.68.  
magnesium, finding wider application to machine parts,  
Dec., p.34.  
nickel, used in bearings, announced,\* May, p.68.  
nickel, with aluminum, cobalt, iron, used in magneto,\* Oct.,  
p.36.  
nonferrous, zirconium-copper, announced,\* Aug., p.66.  
steel, improving gear materials with nickel, Dec., p.47.  
Wilcox-Rich, solve "impossible" problems,\* Jan., p.27.  
zinc, in accounting machine, June, p.33.

### Aluminum,

drying reel, rayon machine,\*\* March, p.26.  
structural, in telescoping lift,\*\* April, p.35.  
Copper, castings for sealing ends in bread wrapper,\*\* Sept.,  
p.52.  
Chromium, trim of camera body,\*\* Feb., p.44.  
Directory of, supplement to Oct. issue, between pages 46 and 47.  
Glass,  
braider demonstrates weaving principles, Dec., p.29.  
pump, utilizing in,\* Aug., p.33.

### Iron,

cast, as gear material,\*\* June, p.46.  
cast, authoritative information on engineering properties of,  
booklet, Sept., p.43.  
cast, behavior under thermal stresses,\*\* Feb., p.49.  
cast, centrifugally, in oil field equipment,\*\* Oct., p.34.  
cast, for accounting machine frame,\*\* June, p.34.  
cast, how affected by heat treatment, June, p.53.  
malleable, combination of properties is strong point of, dis-  
cussion, Oct., p.37.  
producers of, directory, supplement to Oct. issue, p.40D.  
tradenames, directory, supplement to Oct. issue, p.15D.  
Laminated, built up machine parts, Feb., p.34.  
Metals, combining plastics with metals, April, p.31.

\* Denotes short articles or announcements, less than page.  
\*\* Denotes references contained in major articles.



Nonferrous metals,  
 producers, directory, supplement to Oct. issue, p.40D.  
 tradenames, directory, supplement to Oct. issue, p.15D.  
 Nonmetallic other than Plastics,  
 producers, directory, supplement to Oct. issue, p.42D.  
 tradenames, directory, supplement to Oct. issue, p.34D.  
 Oil field equipment, durability important, Oct., p.33.  
 Plate, clad with stainless steel, announced,\* Dec., p.58.  
 Stainless steel bonded to inert metal,\* Nov., p.36.  
 Steel,  
 behavior under thermal stresses,\*\* Feb., p.49.  
 cams in accounting machine,\*\* June, p.35.  
 castings, how welding helps redesign of, Feb., p.41.  
 cold-rolled, used in fluid flywheel casings,\*\* Jan., p.24.  
 how affected by hardening and temperature, Nov., p.49.  
 in model airplane engine,\*\* Feb., p.45.  
 in welded machine tools,\*\* Jan., p.40.  
 low alloy, in oil field equipment,\*\* Oct., p.33.  
 most widely used gear material,\*\* June, p.45.  
 nitriding of proves worth,\*\* Sept., p.44.  
 producers of, directory, supplement to Oct. issue, p.40D.  
 tradenames, directory, supplement to Oct. issue, p.15D.  
 welded, forms "Marsh Buggy" tires,\* Jan., p.25.  
 Tungsten, dampens bounce in relays,\* March, p.31.

#### Mechanisms:

Conveying, in bread wrapper,\*\* Sept., p.51.  
 Feeding, in small grinder,\*\* Sept., p.35.  
 Feeding and indexing, in automatic screw machine,\*\* April, p.22-S.  
 Indexing, automatic, in turret punch,\*\* Sept., p.38.  
 Pawl and ratchet, for "tight and loose wrap" in bread wrapper,\*\* Sept., p.50.  
 Shut-off, in bread wrapper,\*\* Sept., p.51.  
 Sizing, in small grinder,\*\* Sept., p.36.

#### Motors:

Accounting machine, continuous operation,\*\* June, p.34.  
 Base holds belt tension, announced,\* Sept., p.68.  
 Brake, drives bread wrapper,\*\* Sept., p.52.  
 Capacitor, versatility increasing,\* April, p.28.  
 Clutch excitation controls, announced,\* Nov., p.62.  
 Compressor drive, built-in,\* May, p.30.  
 Cooled by refrigeration,\* Dec., p.33.  
 Damper motor, announced,\* Jan., p.56.  
 Double reduction, features mounting, announced,\* Dec., p.60.  
 Explosion-proof,  
 line extended, announced,\* April, p.48.  
 new line brought out, announced,\* April, p.50.  
 Fractional horsepower,  
 announced,\* March, p.66.  
 in glass braider,\*\* Dec., p.31.  
 Geared head, new line announced,\* May, p.62.  
 Grinder, mounted low in machine,\*\* Sept., p.34.  
 Heat, bimetal operates,\* Nov., p.35.  
 Large, operate quietly, announced,\* Nov., p.68.  
 Light duty, announced,\* Aug., p.80.  
 Lint-free, for textile industry, announced,\* April, p.54.  
 Main motor drives automatic screw machine,\*\* April, p.21-S.  
 Oil drilling, announced,\* July, p.62.  
 Oil pump incorporated, announced,\* June, p.70.  
 Paper machinery utilizes,\*\* May, p.41.  
 Permanent split phase, announced,\* Jan., p.62.  
 Protected against burnout, announced,\* Oct., p.68.  
 Reversing, one-horsepower, in telescoping lift drive,\*\* April, p.36.  
 Rotor, centrifugally cast copper, announced,\* July, p.58.  
 Servo-, reduce operator's load, Jan., p.36.  
 Shell-type, when to use, April, p.24-S.  
 Small, aircraft type, announced,\* Aug., p.72.  
 Speed reducer, runs very slowly, announced,\* Nov., p.72.  
 Squirrel cage, reverse rapidly, announced,\* June p.78.  
 Stoker, protected by, announced,\* Sept., p.72.  
 Synchronous, low speed, announced,\* Oct., p.64.  
 Which Motor Fits the Job?, July, p.36.

\*Denotes short articles or announcements, less than page.  
 \*\*Denotes references contained in major articles.

## N

#### New Machines (listing):

Jan., p.82; Feb., p.96; March, p.86; May, p.82; June, p.104;  
 July, p.90; Aug., p.97; Sept., p.104; Nov., p.98; Dec., p.96.

#### New Parts and Materials:

Jan., p.54; Feb., p.62; March, p.64; April, p.44; May, p.62;  
 June, p.68; July, p.57; Aug., p.66; Sept., p.66; Oct., p.64;  
 Nov., p.62; Dec., p.58.

#### Noise:

Detection, by tin ear,\* Sept., p.39.  
 Reduction,  
 through use of nonmetallic casing,\* Aug., p.33.  
 in glass braider,\*\* Dec., p.31.  
 shoe stitching machine, use molded laminated phenolics,\*  
 Dec., p.33.

#### Noteworthy Patents:

Jan., p.52; Feb., p.58; March, p.56; May, p.56; June, p.64, July,  
 p.55; Aug., p.58; Sept., p.62; Nov., p.59; Dec., p.56.

## O

#### Obituaries:

Day, Percy C., Jan., p.50.

#### Oil Seals and Packings:

Bellows, used in fluid flywheel,\*\* Jan., p.24.  
 End fittings welded to metallic tubing, method announced,\*  
 July, p.60.  
 Metal and rubber utilized,\* May, p.30.  
 Selecting seals and packing, May, p.34; June, p.42; July, p.39.

## P

#### Parts:

Atomizers, variable capacity,\* May, p.29.  
 Crankshafts,  
 dynamic balance for, Aug., p.53.  
 in small grinder,\*\* Sept., p.35.  
 Diaphragms,  
 assure ultimate safety, Sept., p.53.  
 in self-contained telephone system,\* March, p.30.  
 Gimbals (couplings), in telescope mounting,\*\* Jan., p.34.  
 Governors, how graphs aid in design of, May, p.39.  
 How affected by thermal stresses in, Feb, p.47.  
 Idler, ball bearing, announced,\* Jan., p.70 and Aug., p.72.  
 Laminated, strip metal and standard bars, Feb., p.34.  
 Magnesium alloys find wider application in, Dec., p.34.  
 Plastic moldings— injection or compression molded?, July, p.29.  
 Thermostats, two control units announced,\* Dec., p.62.  
 Trap, mechanical, for draining water, announced,\* June, p.74.

#### Patents:

How to determine patentability, June, p.49.  
 New laws speed procedure, Dec., p.37.  
 Searches, don't skimp on, March, p.38.

#### Pipe:

Standard sections facilitate repairs in stoker,\* Sept., p.38.  
 Unions for, announced,\* Aug., p.76.

#### Plastics:

Cellulose acetobutyrate, Tenite II, announced,\* Feb., p.68.  
 Custom molders, directory, supplement to Oct. issue, p.60D.  
 Durez, two newly formulated, announced,\* March, p.68.  
 Gears, for quiet drives,\*\* April, p.34-S.  
 Injection or Compression Molding?, July, p.29.  
 Nonmetallic gears and couplings deaden vibration, April,  
 p.48-S.  
 Physical properties of, how affected by use, Dec., p.40.  
 Producers, supplement to Oct. issue, p.42D.  
 Spinning reel, of rayon machine,\*\* March, p.26.  
 Tradenames and analyses of, directory, supplement to Oct.  
 issue, p.34D.

Two-tone, in counter wheel,\* Jan., p.26.  
Why not combine the plastic with the metal?, April, p.31

#### **Pneumatic Equipment:**

Air cushion, for air cylinders, announced,\* Feb., p.76.  
Air cylinder, valve control for announced,\* Dec., p.58.

#### **Principles:**

*See also Machinery.*

Elastic hinge, utilized in telescope mounting, Jan., p.34.  
Screw conveyor, mixes materials,\* April, p.29.  
Weaving, demonstrated by glass braider, Dec., p.29.

#### **Production:**

Flame hardening,  
applications show steady increase, April, p.30.  
in gears,\*\* June, p.47.  
Heat treatment, how it affects cast iron, June, p.53.  
Nitriding, steel, has advantages to designer, Sept., p.44

#### **Professional Viewpoints:**

March, p.49; April, p.42; May, p.47; Nov., p.55; Dec., p.53

#### **Pulleys:**

Antifriction idler, announced,\* May, p.72.  
Belt drives, announced,\* April, p.54.  
Life of increased by heavy beads, announced,\* Dec., p.68.  
Variable speed, improved design of, announced,\* Feb., p.64.

#### **Pumps:**

Ball bearings standard on, announced,\* Aug., p.70.  
Booster, in hydraulic systems,\*\* April p.29-S.  
Concrete pumping machine uses single or double-cylinder,\*\*  
Nov., p.44.  
Coolant and lubricant, announced,\* April, p.44.  
Coolant, mounts against reservoir, announced,\* Sept., p.70.  
Electric fuel, no parts requiring lubrication are used,\* Sept.,  
p.39.  
Hydraulic volume automatically controlled, announced,\* Jan.,  
p.54.  
Hydraulic,  
announced,\* May, p.74.  
variable volume, announced,\* March, p.66.  
In candy machine,\*\* Feb., p.29.  
Machine tool, announced,\* p.62.  
Motorpumps,  
announced,\* March, p.74.  
added to line, announced,\* June, p.78.  
another added to line, announced,\* Oct., p.74.  
for compact installations, announced,\* March, p.70.  
Oil fields, in,\*\* Oct., p.35.  
Rotary, direct-driven, announced,\* Dec., p.66.

### **R**

#### **Research Publications:**

*Analysis of Mechanical Action of Synchronizers in Automobile  
Gear Transmissions*, by George B. Upton, May, p.40.  
*Fatigue Tests of Butt Welds in Structural Steel Plates*, by  
Wilbur M. Wilson and Arthur B. Wilder, May, p.40.

#### **Rubber:**

Mountings,  
in candy machine,\*\* Feb., p.30.  
load characteristics of, Aug., p.47 and Oct., p.43.  
Materials, synthetic, used for fuel tanks,\* June, p.36.

### **S**

#### **Shafting:**

Flexible, facilitates control problems, Aug., p.43.

#### **Solenoids:**

*See Controls (electrical).*

#### **Springs:**

Balancing with, hinged masses, Feb., p.37.

\*Denotes short articles or announcements, less than page.  
\*\*Denotes references contained in major articles.

Disk, design and selection of, March, p.32.  
Factors affecting accurate selection of, Aug., p.34.  
Flat, utilizing in accurate mechanism, Nov., p.40.  
Refinements in automobile, 1940,\*\* Nov., p.34.

#### **Stresses:**

Analysis of, by three-dimensional photoelasticity,\* July, p.41.  
Crankshaft, calculating from strain gage readings, Jan., p.28.  
Eye rod, computing from curves, Sept., p.47.  
Relief of, in welded machine tools,\*\* Jan., p.40.  
Surface fatigue, how to reduce, March, p.42.  
Thermal, why they cause failure of parts, Feb., p.47.

#### **Stampings:**

Producers, directory, supplement to Oct. issue, p.44D.

#### **Styling:**

Color, helps sales, Oct., p.40.  
Grinder, obtaining through placing all mechanism inside  
housing,\*\* Sept., p.34.  
Illusions aid appearance, April, p.23.  
Incorporated in candy machine,\*\* Feb., p.29.  
Nameplates enhance attractiveness, Nov., p.37.  
Switches built-in to facilitate "cleanlining,"\* Feb., p.33.  
Why streamline? Aug., p.39.

### **T**

#### **Testing:**

Surface finish, with profilograph,\* Dec., p.46.

#### **Topics:**

Jan., p.20; Feb., p.26; March, p.22; April, p.62; May, p.48;  
June, p.30; July, p.26; Aug., p.26; Nov., p.28.

#### **Trends:**

Looking Ahead! April, p.35-S.

#### **Tubing:**

Hydraulic, fitting for, announced,\* Sept., p.78.

### **V**

#### **Valves:**

Galling eliminated in design, announced,\* Nov., p.66.  
Gate, in wide range of alloys, announced,\* Jan., p.67.  
Heavy pintles aid flow in, announced,\* Feb., p.78.  
Hydraulic systems, in,\*\* April, p.28-S and May, p.23.  
In concrete pumping machine,\*\* Nov., p.44.  
Nonforceable, prevents breakage,\* Feb., p.31.  
Pilot, resistance, in hydraulic systems,\*\* May, p.23.  
Pump, intermetallic compound used in, announced,\* Aug., p.74.  
Single plunger, announced,\* Aug., p.68.  
Steel, bushings need no lubrication, announced,\* Feb., p.62.  
Suction, for compressor, redesign reduces size, July, p.44.

### **W**

#### **Welding:**

Alloy powder announced,\* Aug., p.78.  
Contactors for, announced,\* Jan., p.62.  
Economies effected by, in new paper shredder, Nov., p.51.  
Electrodes,  
all analyses, announced,\* July, p.58.  
carbon steel, resists wear, announced,\* Oct., p.76.  
welds moly-stainless, announced,\* July, p.64.  
Hose, announced,\* June, p.76.  
How welding helps redesign of steel castings, Feb., p.41.  
Jig, in construction of rayon machine,\*\* March, p.28.  
Machine, spotwelds in multiple steps,\* Feb., p.56.  
Machine tools, weight reduced, rigidity increased, Jan., p.40.  
Melt, granulated, covers welding arc,\* Feb., p.32.  
Oil field equipment, structural shapes and plates welded,  
Oct., p.33.

#### **Wire:**

Magnet, insulated with resin, announced,\* March, p.75.



